IN THE CLAIMS

Please substitute the claim set below for the currently pending claim set. All intentional deletions are either shown within double brackets or shown as struck-through text. All intentional insertions are shown as underscored text. To the extent the claims listed below make other (i.e. unmarked) changes to the claims, such changes are unintentional and are made in error.

18. (currently amended) A method of cooling an axle assembly of a work vehicle, wherein the axle assembly includes an axle shaft, and axle housing configured to substantially surround the axle shaft, a cooling coil housed within the axle housing and having a passage therethrough and outer and inner surfaces, a lubricating fluid disposed within the axle housing, and a cooling fluid disposed within the passage, and further wherein the lubricating fluid is of a higher temperature than is the outer surface of the coil and the outer surface of the coil is of a higher temperature than is the cooling fluid, the method comprising steps of:

removing heat from the lubricating fluid by placing the lubricating fluid in contact with the outer surface of the coil wherein the outer surface of the coil is disposed between a brake assembly and a differential gearset; and

removing the heat from the inner surface of the coil by circulating the cooling fluid through the passage.

19. (Original) The method of claim 18, further comprising the step of:

directing flow of cooling fluid to the coil by using a back pressure regulating valve to impose a pressure difference across the coil.

20. (Original) The method of claim 19, further comprising the step of:

removing the heat from the cooling fluid by circulating the cooling fluid through a heat exchanger.

21. (New) The method of 20 wherein the coil includes a structure selected from the group including fins and dimples.

22. (New) The method of 20 wherein the coil is disposed entirely underneath the axle shaft.

23. (New) The method of 20, wherein the axle assembly includes a second cooling coil, and wherein the cooling coil is disposed in a left axle housing and the second cooling coil is disposed in a right axle housing, and wherein the method further comprises the step of:

removing heat from the lubricating fluid by placing the lubricating fluid in contact with the outer surface of the second coil.

24. (New) A method of cooling an axle assembly of a work vehicle, wherein the axle assembly includes an axle shaft, and axle housing configured to substantially surround the axle shaft, a cooling coil housed within the axle housing and having a passage therethrough and outer and inner surfaces, a lubricating fluid disposed within the axle housing, and a cooling fluid disposed within the passage, and further wherein the lubricating fluid is of a higher temperature than is the outer surface of the coil and the outer surface of the coil is of a higher temperature than is the cooling fluid, the method comprising steps of:

removing heat from the lubricating fluid by placing the lubricating fluid in contact with the outer surface of the coil wherein the outer surface of the coil is disposed in one of a left axle housing and a right axle housing; and

removing the heat from the inner surface of the coil by circulating the cooling fluid through the passage.

25 (New) The method of 24 wherein the coil is formed of a single length of tubing in a plurality of parallel passes by a series of 180° bends.

26. (New) The method of 24 wherein the coil includes a structure selected from the group including fins and dimples.

27. (New) The method of 24 wherein the coil is disposed entirely underneath the axle shaft.

28. (New) The method of 24, wherein the axle assembly includes a second cooling coil, and wherein the cooling coil is disposed in a left axle housing and the second cooling coil is disposed in a right axle housing, and wherein the method further comprises the step of:

removing heat from the lubricating fluid by placing the lubricating fluid in contact with the outer surface of the second coil.

29. (New) A method of cooling an axle assembly of a work vehicle, wherein the axle assembly includes an axle shaft, and axle housing configured to substantially surround the axle shaft, a cooling coil housed within the axle housing and having a passage therethrough and outer and inner surfaces, a lubricating fluid disposed within the axle housing, and a cooling fluid disposed within the passage, and further wherein the lubricating fluid is of a higher temperature than is the outer surface of the coil and the outer surface of the coil is of a higher temperature than is the cooling fluid, the method comprising steps of:

transmitting heat from a wet multiple disk brake disposed in the axle housing to the lubricating fluid;

removing heat from the lubricating fluid by placing the lubricating fluid in contact with the outer surface of the coil; and

removing the heat from the inner surface of the coil by circulating the cooling fluid through the passage.

30 (New) The method of 29 wherein the coil is formed of a single length of tubing in a plurality of parallel passes by a series of 180° bends.

31. (New) The method of 29 wherein the coil includes a structure selected from the group including fins and dimples.

32. (New) The method of 29 wherein the coil is disposed entirely underneath the axle shaft.

33. (New) The method of 29, wherein the axle assembly includes a second cooling coil, and wherein the cooling coil is disposed in a left axle housing and the second cooling coil is disposed in a right axle housing, and wherein the method further comprises the step of:

removing heat from the lubricating fluid by placing the lubricating fluid in contact with the outer surface of the second coil.